AMENDMENTS TO THE CLAIMS

1-8. (Withdrawn)

9. An optical disc~~,~~ comprising:

a microfluidic circuit that is responsive to centrifugal force resulting from rotation of the disc, the circuit comprising:

an entry chamber positioned proximate a center of the optical disc and ~~an entry chamber for~~ configured to hold ~~holding~~ a specimen having disperse particles and particle agglutinants; ~~and~~

a collection zone positioned promixate an outer edge of the optical disc;

a separation structure positioned between the entry chamber and the collection zone, the separation ~~zone~~ structure ~~disposed downstream of the entry chamber, the specimen being urged toward the separation zone structure by the centrifugal force, the separation zone structure having~~ comprising a plurality of structures that define gaps therebetween, the distance between the gaps being less than or equal to the width of the particle agglutinants, the separation structure being configured to separate particle agglutinants from the disperse particles when the specimen is urged toward the separation structure by centrifugal force created when the optical disc is rotated; and ~~large enough to allow disperse particles to escape the entry chamber, the gaps being small enough to retain particle agglutinants in the entry chamber.~~

a tracking groove positioned at least partly beneath the entry chamber and proximate the separation structure, wherein particle agglutinants in the entry chamber can be quantified by determining an amount of the tracking groove that is at least partly covered by particle agglutinants.

10. (Canceled)

11. (Canceled)

12. The optical disc of claim 9 ~~11~~, further comprising a collection tracking groove positioned in the collection zone, wherein the presence of the disperse particles in the collection zone can be determined by coverage of the collection tracking groove by disperse particles ~~wherein when the substrate is rotated the presence of disperse particles can be determined by the coverage of the tracking groove by disperse particles in the collection zone~~.

13. (Canceled)

14. (Canceled)

15. The optical disc of claim 9 ~~10~~, wherein the separation ~~zone~~ structure includes a series of slits formed in the optical disc ~~substrate~~, each slit having a predetermined width that allows disperse particles to pass therethrough while causing particle agglutinants to be retained in the entry chamber ~~collection zone~~.

16. The optical disc of claim 15, wherein the slits are formed by a series of rib structures ~~disposed in the separation zone structure~~.

17. The optical disc of claim 16, wherein the ~~structures forming the~~ series of rib structures are substantially parallel to each another.

18. The optical disc of claim 16, wherein the ~~structures forming the~~ series of rib structures are radially directed from the center of the disc.

19. The optical disc of claim 10, wherein the predetermined width of each slit decreases as a function of increasing distance from the center of the disc.

20. The optical disc of claim 18, wherein each of the rib structures has a width that increases as a function of increasing distance from the center of the disc.

21. The optical disc of claim 9 ~~14~~, wherein each of the structures comprises a post ~~wherein each post has~~ having a predetermined diameter.

22. The optical disc of claim 21, wherein ~~for posts along a radius from the center of the disc along the substrate, the~~ a diameter of consecutive posts increases as a function of increasing distance from the center of the disc.

23. The optical disc of claim 21 ~~14~~, wherein the number of posts per unit area increases as a function of increasing distance from the center of the disc.

24. The optical disc of claim 15, wherein the width of the slits decreases as a function of increasing distance from the center of the disc.

25. The optical disc of claim 9, wherein the structures comprise ~~separation zone structure includes~~ a filter having a preselected porosity so that when the optical disc is rotated, disperse particles escape from the entry chamber and particle agglutinants are retained in the entry chamber.

26. The optical disc of claim 25, wherein the filter is formed from a material selected from the group consisting of glass fiber and plastic fiber.

27. The optical disc of claim 26, wherein the glass fiber is formed from a material selected from the group consisting of alumina, silica, and quartz.

28. The optical disc of claim 26, wherein the plastic fiber is formed from a material selected from the group consisting of cellulose acetate, cellulose nitrite, mixed cellulose esters, polyethersulfone polyvinyl chloride, polycrylonitrile, polycarbonate, polysulfone, polyfluorotetra-ethylene, polyvinylidene-fluoride, and cellulose.

29. The optical disc of claim 25, wherein the filter is formed from a material selected from the group consisting of glass particles and plastic particles.

30. The optical disc of claim 29, wherein the glass particles are formed from a material selected from the group consisting of alumina, silica, and quartz.

31. The optical disc of claim 29, wherein the plastic particles are formed from a material selected from the group consisting of cellulose acetate, cellulose nitrite, mixed cellulose esters, polyethersulfone polyvinyl chloride, polycrylonitrile, polycarbonate, polysulfone, polyfluorotetra-ethylene, polyvinylidene-fluoride, and cellulose.

32-76. (Withdrawn)

77. An optical disc for separating disperse particles from particle agglutinants, comprising:

a plurality of tracks disposed on an outer periphery of the optical disc;

a main chamber disposed between at least a portion of the plurality of tracks and a light detector, the main chamber comprising:

an entry chamber configured to accept a sample; and

~~having~~ a separation ~~zone~~ structure comprising ~~having~~ solid components spaced apart to form gaps, the gaps being large enough to allow disperse particles to change position relative to the center of the disc by passing through the separation ~~zone~~ structure, the gaps being too small to allow particle agglutinants to pass through the separation ~~zone~~ structure;

wherein a quantity of disperse particles may be determined by using the light detector to count a number of the plurality of tracks that are covered by the disperse particles

~~a mixing chamber in communication with the main chamber; and~~

~~a target area in communication with the mixing chamber~~.

78. An optical disc for separating disperse particles from particle agglutinants, comprising:

a plurality of tracks disposed proximate a central portion of the optical disc;

a main chamber~~;~~ disposed between at least a portion of the plurality of tracks and a light detector, the main chamber comprising:

an entry chamber configured to accept a biological sample and an assay reagent, wherein the biological sample and the assay reagent are mixed to form particle agglutinates and disperse particles;

a collection zone configured to contain disperse particles; and

~~a mixing chamber in communication with the main chamber, the mixing chamber having~~ a separation ~~zone~~ structure having solid components spaced apart to form gaps, the gaps being sized so that particle agglutinates are retained in the entry chamber while ~~large enough to allow~~ disperse particles are allowed to pass through the separation structure into the collection zone when the optical disc is rotated,~~to change position relative to the center of the disc by passing through the separation zone structure, the gaps being too small to allow particle agglutinants to pass through the separation zone structure; and~~

~~a target area in communication with the mixing chamber~~

wherein a quantity of particle agglutinates may be determined by using the light detector to count a number of the plurality of tracks that are covered by the particle agglutinates.

79. (Canceled)

80. (Withdrawn)

81. (Canceled)

82-90. (Withdrawn)

91. (New) An optical disc comprising:

an entry chamber positioned proximate a center of the optical disc and configured to contain a mixture comprising disperse particles and particle agglutinants;

a collection zone positioned proximate an outer edge of the optical disc; and

a first separation structure positioned between the entry chamber and the collection zone, the separation structure comprising a plurality of structures defining at least a first gap therebetween, a width of the at least a first gap being greater than a width of at least a portion of the particle agglutinants, and

a second separation structure positioned between the first separation structure and the collection zone, the second separation structure comprising a plurality of structures defining at least a second gap therebetween, a width of the at least a second gap being less than or equal to a width of substantially e of the particle agglutinants,

wherein the first and second separation structures are configured to separate particle agglutinants from the disperse particles when the mixture is urged toward the separation structures by centrifugal force created when the optical disc is rotated.

92. (New) The optical disc of Claim 91, further comprising:

a circular track surrounding the center of the optical disc, the track positioned at least partly beneath the entry chamber and proximate the first separation structure, wherein particle agglutinants in the entry chamber can be quantified by determining an amount of the tracking groove that is covered by particle agglutinants.

93. (New) The optical disc of Claim 91, further comprising:

a separation zone disposed radially between the first separation structure and the second separation structure;

a second tracking groove positioned at least partly beneath the separation zone and proximate the second separation structure, wherein particle agglutinants in the separation zone can be quantified by determining an amount of the second tracking groove that is at least partly covered by particle agglutinants.

94. (New) The optical disc of Claim 91, further comprising:

a plurality of tracking grooves positioned at least partly beneath the entry chamber and proximate the first separation structure, wherein particle agglutinants in the entry chamber can be quantified by determining an amount of each of the plurality tracking grooves that is covered by particle agglutinants.